

HITOX[®]

The Unique Color Pigment

✓ COLOR PIGMENT

- High titanium dioxide content - 95%
- Reduces need for more expensive color pigments
- Attenuates UV light
- Neutral buff color
- Uniform consistent strength
- Chalk resistant, meets ASTM D476-84 Type II and Type III

✓ OPACIFIER

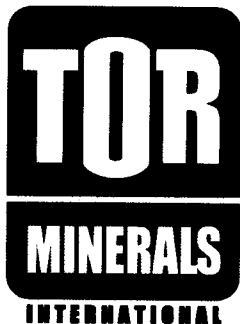
- High refractive index relative to dispersion media
- Uniform particle size over narrow range
- Efficient light scattering

✓ STABLE & SAFE

- Virtually inert to acids, alkalis, solvents & redox agents
- Does not react with media, resins, other pigments
- Not toxic, fibrogenic, carcinogenic or allergenic

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HITOX COLOR PIGMENT
June 2000 DAB



HITOX[®]

The Unique Color Pigment

TiO₂ does not have to be pure white - or expensive

HITOX[®] (high grade titanium dioxide), a buff-colored rutile titanium dioxide (TiO₂) is designed for use in tinted coatings, paints, plastics and many other products. TiO₂ is the primary pigment used to impart opacity, durability, gloss and brightness. Products incorporating TiO₂ include all types of paints, primers, automotive, appliance, and other finishes, PVC pipe, plastics, paper and inks. Most titanium dioxide is pure white, but HITOX demonstrates that whiteness is not a prerequisite for effectiveness in color formulations. As a unique color pigment, HITOX is used in almost all colors of the spectrum offering performance and cost effectiveness.

HITOX[®] TiO₂ versus white TiO₂ in colored products

| HITOX[®] TiO₂ | White TiO₂ |
|---|---|
| ◆ In colored products, offers comparable performance characteristics to white TiO ₂ : opacity, consistency and color quality | ◆ Standard pigment for use in white products |
| ◆ Lower cost, 95% rutile TiO ₂ | ◆ Expensive prime pigment |
| ◆ Light buff color allows reduction of expensive tinting pigments | ◆ In colors, resulting whiteness must be "overcome" by tinting with expensive additional pigments |
| ◆ Reduction of expensive pigments provides greater cost effectiveness | ◆ Additional pigments add cost to finished product |

How is HITOX[®] used?

In products which require opacity and color but which do not have to be pure white, HITOX can reduce the amount of expensive color pigments that must be used, as well as, economical replacement of part of the white TiO₂. Depending on the finished color desired, HITOX can replace from 15 to 100 percent of the white TiO₂ and may also allow the reduction of phthalo blues and greens, hansa yellows, organic oranges, and other color pigments achieving considerable savings. HITOX is chemically inert and is approved by the NSF and FDA.

continued

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HITOX BUFF COLOR VS. WHITE
June 2000 DAB

Applications for HITOX®

Some examples of coatings applications in which HITOX is used widely and successfully are architectural paints, traffic marking paints, automotive and maintenance primers, and coatings for appliances and office furniture. Coatings systems that may incorporate HITOX include alkyds, acrylic urethanes, high solids systems, water reducibles, water bases, powder coatings, and others.

Plastics uses include most colors of PVC pipe and conduit, vinyl siding, floor tiles, color concentrates, and plastic film.

HITOX is also used in inks, adhesives, paper, roofing products, and other building materials.

Manufacturing and quality control

HITOX pigment is manufactured from an intermediate raw material, synthetic rutile TiO_2 , which is made from ilmenite. In early 1991, the opening of a synthetic rutile plant in Malaysia secured the long-term raw material supply for HITOX. To support advanced research and development, skilled laboratory and engineering staff are located at our Corpus Christi, Texas Technical Center. The Technical Center coordinates process control and quality assurance, providing lot-to-lot consistency of color, chemistry, and particle size from raw material through the finished product.

HITOX is produced from synthetic rutile TiO_2 through the process of fluid energy milling. During the manufacture of synthetic rutile TiO_2 , strong acid leaching and high temperature calcination render HITOX completely inactive and inert. The process produces a high quality pigment with a very small percentage of chemically bound iron oxide, which partially gives HITOX its characteristic buff color. TOR Minerals uses fluid energy milling to produce the final product, which has a specified fineness with particles slightly larger and more irregularly-shaped than white TiO_2 . After other processing, testing and quality control procedures, the powder-form pigment is collected for bagging and shipping. The quality and consistency of HITOX pigments have improved over the years, allowing its use in an ever-broadening range of clean, bright colors.

TOR Minerals International

TOR Minerals is a specialty chemical company which manufactures and markets innovative, high-quality performance mineral products for use as pigments and pigment extenders in the paint, plastic and chemical industries. HITOX® Titanium Dioxide is our principal product line; however, we do manufacture other products which include BARTEX® Barium Sulfate, and HALTEX® Alumina Trihydrate. The company is represented world-wide by a network of distributors, agents, and licensees.